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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,632	10/15/2003	James T. Beals	EH-11058(03-546)	4988
34704	7590	07/14/2004	EXAMINER	
BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			LIN, ING HOUR	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/685,632

Applicant(s)

BEALS ET AL.

Examiner

Ing-Hour Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0709.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al.

Kobayashi et al (col. 6, lines 19+) teach the claimed refractory metal core in casting a leading edge honeycomb structure of aircraft airfoil having a plurality of dimples internally supported by honeycomb ribs 9, comprising: refractory core sheets 21, 22, made of refractory metal alloy Ti-6Al-4V.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auxier et al in view of Jackson et al.

Auxier et al (abstract, col. 5, lines 17+ and Figs. 7+) teach the claimed casting system for forming a cooled airfoil, comprising: a shaped metal sheet (inner shell) 100 having a leading edge, a training edge and central portion between the leading edge and the training edge and forming a plurality of film cooling passages for cooling the airfoil. Auxier et al fail to teach the use of a refractory metal sheet.

However, Jackson et al (col. 14, lines 8+) teach the use of a refractory metal sheet made of refractory metals including molybdenum (Mo), tantalum (Ta), niobium (Nb), tungsten (W) or alloys thereof for the purpose of effectively improving high temperature performance of casting the airfoil. It would have been obvious to one having ordinary skill in the art to provide Auxier et al a refractory metal sheet as taught by Jackson et al in order to improve high temperature performance of casting the airfoil.

6. Claims 6-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossmann et al in view of Galmiche et al.

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Rossmann et al (col. 2, lines 53+) teach the claimed casting system for forming a turbine blade, comprising: a metal wall 1 having an airfoil shape and metal core 3 adjacent the metal wall and a shape corresponding to the shape of the shape of metal wall. Rossmann et al fail to teach the use of a refractory metal core.

However, Galmiche et al (col. 1, lines 38+ and Fig. 1) teach the use of a refractory metal core 1 having an internal structure and formed from two pieces of sheet, made of refractory metals including molybdenum (Mo), tungsten (W) or alloys thereof, joined together at multiple locations, wherein the metal wall has cooling holes 2 for the purpose of effectively improving high temperature performance of casting the airfoil. It would have been obvious to one having ordinary skill in the art to provide Rossmann et al a refractory metal core as taught by Galmiche et al in order to improve high temperature performance of casting the airfoil.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rossmann et al in view of Galmiche et al and further in view of Ress, Jr. et al.

Rossmann et al in view of Galmiche et al fail to teach the use of solid forging the refractory metal core.

However, Ress, Jr et al (col. 5, lines 65+) teach the use of solid forging the refractory metal core for the purpose of effectively fabricating core with high stiffness. It would have been obvious to one having ordinary skill in the art to provide Ress, Jr et al in view of Galmiche et al solid forging the refractory metal core as taught by Galmiche et al in order to effectively fabricate core with high stiffness.

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8. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood et al in view of Mills and further in view of Jackson et al.

Wood et al (col. 3, lines 35-38) teach the claimed core 21 with filler piece 12 embedded within the outer surface of the core for use in a casting system for forming a turbine blade, wherein the surface has protrusions and dimples. Wood et al fail to teach the use of a refractory metal for making the core and ceramic powder for the filler piece.

However, Mills (col. 1, lines 38+ and Fig. 1) teaches the use of dissolving ceramic material for the core material for the purpose of effectively removing the material after casting a cast article. Further, Jackson et al (col. 14, lines 8+) teach the use of a refractory metal sheet made of refractory metals including molybdenum (Mo), tantalum (Ta), niobium (Nb), tungsten (W) or alloys thereof for the purpose of effectively improving high temperature performance of casting the airfoil. It would have been obvious to one having ordinary skill in the art to provide Wood et al a ceramic powder for the filler material and a refractory metal sheet for making the core as taught by Jackson et al in order to improve high temperature casting performance and reduce the casting cycle of making the airfoil.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*E. H. Lin*      *Kiley Stoner AU 1725*  
*I.-H. Lin*      *Kiley Stoner 7/12/04*

7-9-04